Message from Editors

FOR past decades, field oriented control (FOC) and direct torque control (DTC) have become the de facto industry standard. However, dedicated effort from both industry and academic communities are still required to achieve better steady state performance, quicker dynamic response, and simpler structure. Currently, the continuous advancement and improvement of new semiconductor power devices, sensors and microprocessors are presenting new opportunities to the field of high-performance motor drives. All these developments have promoted more advanced control schemes. Recently, model predictive control (MPC) has attracted increasing attention for ac motor drives. Owing to its simple concept, fast transient response, and flexibility in incorporating various constraints, MPC is regarded as a powerful and attractive alternative to the conventional FOC and DTC. However, MPC has not yet reached a mature stage for industrial applications. Many aspects, e.g., reduction of computational burden, sensorless control, robustness against parameter mismatches, etc. need to be further investigated.

The purpose of this special issue (SS) is to provide a forum for both academia and industry to exchange their experience and latest research on the topic of predictive control for motor drives. Due to time constraints and the impact of COVID-19, only 4 peer-reviewed papers are included in this SS at first. These papers reflect some of the advancements on the predictive control of induction motor and permanent magnet synchronous motor drives, including reducing torque ripple, improving steady-state performance and robustness enhancement.

We would like to take this opportunity to express our gratitude to the authors, reviewers and editors for their support and understanding throughout the submission and review of the papers. It is our hope that this special issue could excite more interests and bring valuable ideas on the predictive control of motor drives for readers.

Professor Yongchang Zhang
Deputy Editor-in-Chief

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Guest Editors

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Professor Yongchang Zhang received his bachelor degree from Chongqing University in 2004, doctor degree from Tsinghua University in 2009，both in electrical engineering. From 2009 to 2011, he was a postdoctoral fellow at the Centre for Electrical Machines and Power Electronics, University of Technology Sydney, Australia. He joined North China University of Technology in August 2011 as an associate research fellow. In 2014, he was promoted as a researcher. In 2016, he was appointed as doctoral supervisor. He joined North China Electric Power University in 2020 and was appointed as a professor and doctoral supervisor. He is also China Highly Cited Researcher (2019 & 2020), State Council Special Allowance Expert (2016), Beijing New Star of Science and Technology (2013), IEEE Senior Member (2018-), IET Fellow (2019). At the same time, he is also the director of Beijing Power Electronics Society and director of the Youth Work Committee (2015-), deputy secretary general of the Variable Frequency Committee of China Power Society (2018-), guest editor of IEEE TEC and JESTPE, associate editor of JPE, editorial board member of CJEE and CES TEMS.

He is mainly engaged in the research of power electronics and power transmission, motor system and its control direction. He has been responsible for 3 National Natural Science Foundation of China projects, 6 Beijing Science and Technology Special Projects and a number of horizontal projects. He had published 2 monographs, 3 translations, and 49 SCI papers as the first/corresponding author (43 in IEEE Transactions). Nine papers have been selected as ESI papers, and two papers have been selected as ESI hot papers. He has cited more than 1400 times in SCI.As the first finisher, she has won the Beijing Science and Technology Award, the Innovation Award of China Industry-University-Research Cooperation, the Best Paper Award of IET Journal and the Best Paper Award of many international conferences and other awards.

His focus areas are model predictive control of ac machines, control of grid-connected converters, brushed/brushless doubly fed induction generator system for wind energy applications and advanced control theory and its application in electrical engineering.

Guest Editors: